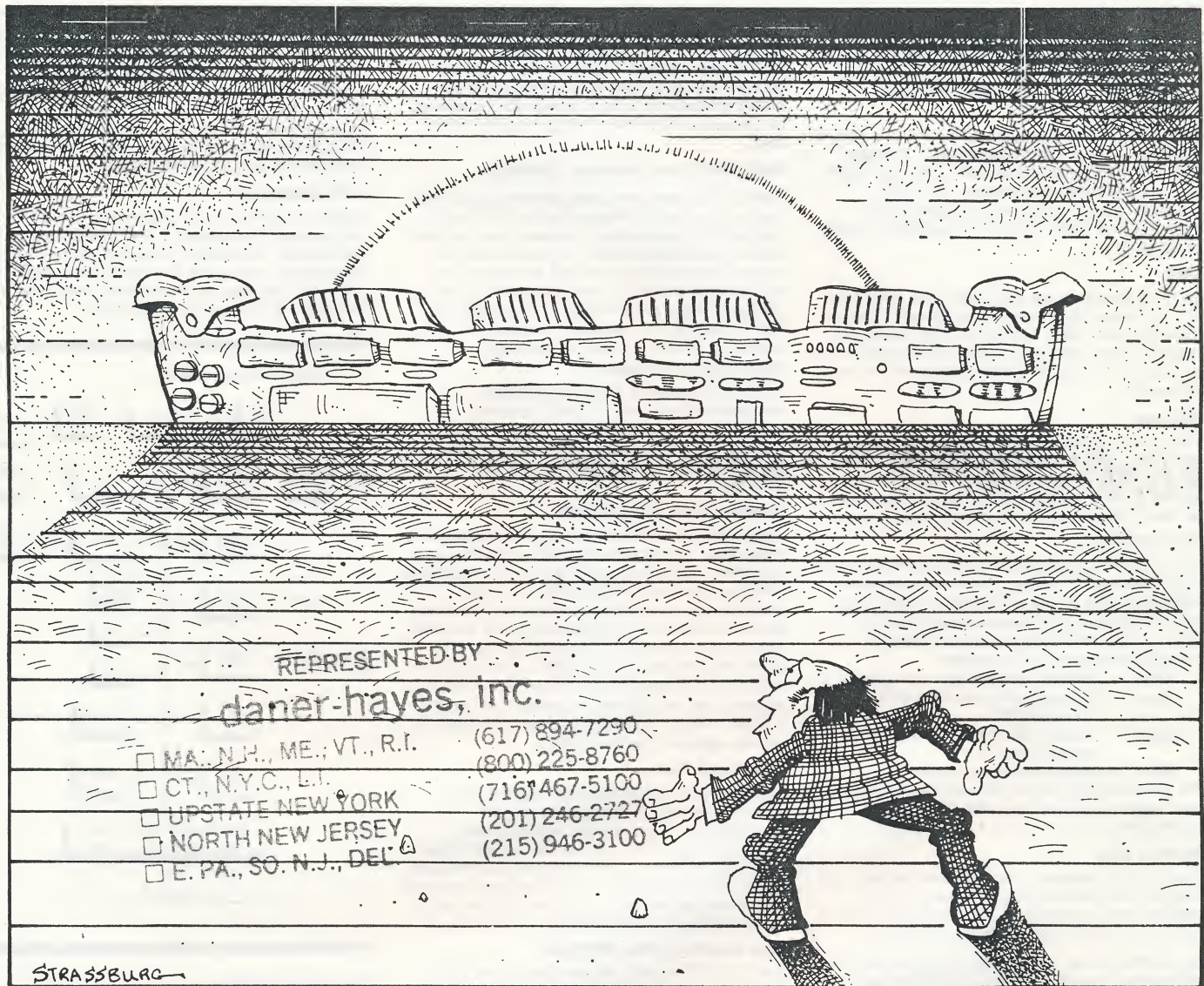


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We've just broadened your horizons:



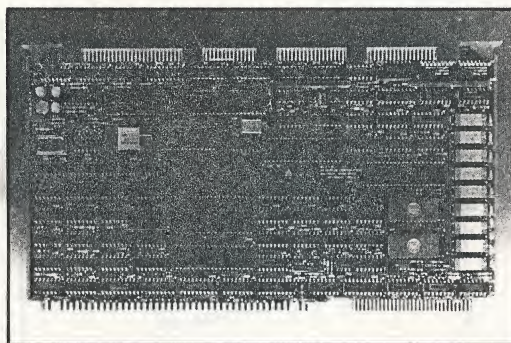
the MLZ-91A microcomputer

(Multibus
+ GPIB)

Heurikon has expanded the horizons of the microcomputer systems designer. Boasting multiple on-card features, the MLZ-91A microcomputer eliminates the need for many of the cards you may presently be using.

This one card is so versatile and effective you will find that it not only simplifies your system design but saves money to boot.

We believe you will find the MLZ-91A is worth your consideration.



heurikon corporation
3001 Latham Drive, Madison, WI 53713

Call Toll Free (800) 356-9602
In Wisconsin Call (608) 271-8700

On-Card Feature Summary

- Z-80A CPU
- DMA Controller
- Memory mapping RAM
- I/O mapping RAM
- 64K write protectable on-card RAM—with parity
- Sockets for up to 16K bytes EPROM
- Double density floppy disk drive controller
- Winchester Interface
- Streamer tape Interface
- GPIB (IEEE-488) Interface
- 20 bit bi-directional Multibus interface (Multimaster or slave mode)
- AM9511 Math Processor
- Four counter/timers
- Two serial ports with RS232/RS423/RS422 I/F
- Option DIP switches and LEDs
- I/O devices and memory accessible from off-card

Heurikon MLZ-91A Single Board Microcomputer Specifications

Features

CPU

Zilog Z-80A CPU (4MHz) providing powerful Z-80 instruction set and vectored interrupt capability. Useful on board jumper allows system clock frequency to be reduced to 2MHz for system debug operations.

APU (Optional)

AM9511 arithmetic processing unit (APU) provides 43 microprogrammed "macro commands" including COS, SIN, TAN, MULT, DIV, SORT, LOG, EXP, ASIN, etc.; stack oriented data transfers; and 32 bit precision. Jumper selectable clock speeds make either 2MHz or 4MHz versions of the AM9511 usable on the MLZ-91A.

DMA

On board programmable DMA offers Z-80 compatible I/O and memory data transfers; multimode operation (byte-at-a-time, burst, continuous); and memory to memory, port to memory, memory to port, and port to port transfers. A vectored interrupt is generated on completion.

Memory

The MLZ-91A has two ROM sockets accommodating Intel 2716, 2732, or 2764 type EPROM and a full 64K bytes of DRAM on-card with parity. Write protect for each 4K block of on-card RAM is user programmable. On board LEDs indicate write protect and parity errors.

Bus Interface

The MLZ-91A is compatible with the expanded 20 bit INTEL Multibus™. Twenty (20) bit address space, fully addressable by CPU or DMA gives the MLZ-91A one (1) megabyte of addressable memory off-card. MLZ-91A bus interface logic provides software programmable master mode operation:

- Mode 0 — Release bus after each transaction.
- Mode 1 — Release bus for any other card (Uses CBREQ —).
- Mode 2 — Release bus only for higher priority cards (Uses BAI —).
- Mode 3 — Never release bus (override)

The MLZ-91A also provides software programmable slave mode operation as well (See "Bus Map"). Eight bi-directional bus interrupts are also provided.

Memory Map

The MLZ-91A provides a programmable address mapping RAM thereby putting the memory map completely under software control. This feature allows full use of the 20 bit address space on the bus.

Any 8K block of bus address space may be mapped or relocated into any 8K block of CPU/DMA address space. Any 4K block of on-card address space may be mapped into any 4K block of CPU/DMA address space. Users can map in any combination of on-card and off-card memory to relocate programs or data merely by changing the mapping RAM contents.

I/O Map

MLZ-91A allows on-card I/O devices to be moved to different I/O base addresses (or turned off completely) under software control. The I/O devices are thus dynamically mapped into the CPU I/O address space.

Bus Map

The bus mapping feature of the MLZ-91A takes the place of hardware jumpers to define the address block which the MLZ-91A board occupies on the Multibus. The one megabyte bus address space is divided into 16 blocks. The operating program can load the bus map to assign the MLZ-91A to one or more of these blocks. In addition, the bus mapping RAM allows certain types of bus requests to be inhibited. Requests from the Multibus for use of on-card memory data (reads), attempts to alter memory (writes) or I/O accesses can each be disabled by control bits in the bus mapping RAM.

GPB (IEEE-488) I/F (Optional)

The Heurikon MLZ-91A microcomputer provides optional on board GPB (IEEE-488) bus interface. Up to 15 devices may be connected on this common bus.

One device is designated as a bus controller. The controller sends messages to the other devices and assigns one device at a time as a "talker" and another as a "listener." Data may be transferred between devices at rates up to one megabyte per second although the actual transfer rate is controlled by the devices themselves through the GPB control lines.

Floppy Disk Drive Controller (Optional)

The MLZ-91A comes with a double density floppy disk interface based on the Western Digital FD1793 chip. The MLZ-91A provides four drive select lines and side select for double sided drives. On board hardware supports 4M bytes of disk storage. Phase lock loop data separator and write precompensation logic are provided on-card. CP/M and MP/M Disk Operating System bootstraps are available in versions of Heurikon's ZRAID-91 monitor and debugger.

Winchester I/F (Optional)

The MLZ-91A provides Winchester interface compatible with the Priam "Smart" controller, Micropolis 1220 series controller, Shugart 1403D series controllers, and many others. Data transfers are done through the MLZ-91A on board DMA controller.

Streamer Tape I/F (Optional)

The streamer tape I/F connects to a tape device which allows back-up for the data stored on the Winchester disk drive. A streamer tape differs from a conventional cartridge tape drive in that the data blocks are recorded very close together on the tape. This allows data to be recorded at a faster average rate and more data may be recorded on a cartridge because the space between blocks is not wasted. The tape runs continuously between blocks instead of starting and stopping. The time required to backup 20 megabytes is about 4 minutes. The streamer tape I/F may also be used as a general purpose PIO port.

Two Serial Ports

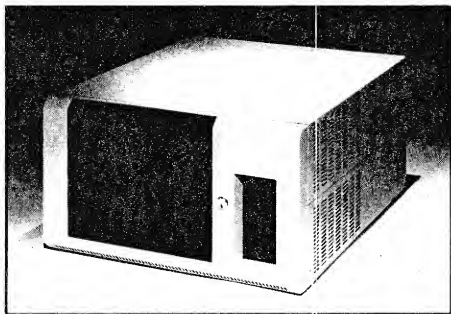
Two serial ports are provided with dual baud rate generator and crystal. These ports support asynchronous or synchronous communication, including SDLC. Baud rates are software selectable from 50 to 19.2K baud. Both ports may be configured for RS-232, RS-422 or RS-423. These latter standards allow serial data communication over long distances (up to 4000 feet) or high rates (up to 10 bits/sec.).

Four Counter/Timer Channels

The MLZ-91A has four independent counter/timer channels. Channels may be used as event counters, real time clocks, or timed interrupt generators. None are required for baud rate clocks. Each channel can independently interrupt when programmed count or time has been reached.

Power-On-Jump

Provided via memory mapping RAM, above.



Numerous systems and applications software packages are available as well as system expansion cards and packaging. Consult Heurikon Master MLZ Price List or contact the Heurikon Corporation for price and delivery.

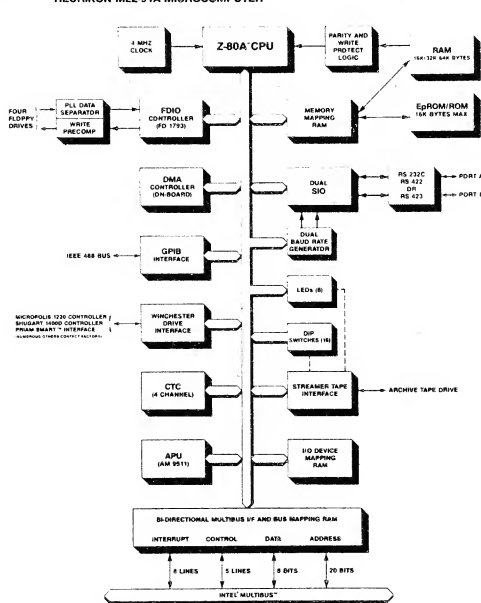
DIP Switches (Optional)

There are 16 switches on the MLZ-91A which may be read by a program. The functions and meanings of the switches are determined by the program. For example, some switches may be used to specify the SIO baud rates, others could be set to designate software options. (Note: Four of the switches are reserved for use by the streamer tape, if the streamer tape option is used on the MLZ-91A).

LEDs (Optional)

A group of eight LED's are provided for general purpose use. The meaning of the LEDs are defined by the software. For example, the LEDs may be used to indicate system status or error conditions. (Note: Two of the LEDs are used by the streamer tape interface if that option is included on the MLZ-91A.)

HEURIKON MLZ-91A MICROCOMPUTER



Operating Systems

Digital Research's CP/M, MP/M, and CP/Net. MLZ-91A users give access to a wide array of system languages including BASIC, FORTRAN, COBOL, PASCAL, "C" and FORTH as well as Z-80 and 8080 assemblers.

Board

Multilayer, 6.75 inch by 12 inch

Power

- + 5VDC logic 2.5A (typical)
- + 12VDC for APU and RS-232-C I/F 125mA (typical)
- 12VDC for RS-232-C I/F 25mA (typical)

Environment

Operating: 0°C to 65°C

Technical Support

MLZ-91A System Manual (170 pages)	\$17.50
ZRAID-91A Monitor and CP/M® bootstrap User Manual	\$ 2.50
CP/M and MP/M Handbook	\$20.00
Heurikon Corporation MLZ Price List	NC

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